

Cytology of the Postnasal Drip

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SUMMARY

About half of a series of 100 consecutive patients with disturbances of the eyes, ears, nose or throat complained of postnasal drip. When smears of the mucous discharge were examined it was found that in about a third of the cases in which there was complaint of drip, neither eosinophils nor neutrophils could be demonstrated. This indicates that causes of the drip other than allergic disease and infection must be considered.

Cytologic examination of the postnasal drip showed that about one-third of the patients with nasal disease or histories positive for allergic reaction had nasal eosinophilia. Nasal eosinophilia was noted occasionally in patients with normal-appearing nasal structures and in patients with no history of allergic disease.

WITH the advent of the antibiotics has come a shift in attention to the cause of chronic nasal conditions and how they may be relieved. Of fundamental diagnostic importance in this regard is the cytologic examination of the postnasal discharge. This aspect of examination has been emphasized by Hansel.^{4,5} Rawlins⁸ expressed the opinion that cytologic examination is absolutely essential and is diagnostic. "The finding of eosinophils in the nasal mucus," Rawlins said, "is characteristic of nasal allergy, just as the neutrophil is characteristic of infection."

OBJECTIVES

Bearing these ideas in mind, the cytologic examination of the postnasal drip of 100 adult patients with disturbances of the eyes, ears, nose or throat was undertaken as a preliminary study to throw any possible light on two questions:

1. What information on the cause of the drip might be revealed; are those complaining of the drip more liable to have eosinophils or neutrophils in the mucus than those not complaining; and, is the presence of the drip or of the cells in the drip related to evident nasal disease?

2. For clinical purposes, what classifications of patients with nasal or postnasal discharge should have a cytological examination made of the discharged material? If not all such patients, then what kind of selected patients?

The 100 adult patients studied were observed consecutively during part of January and February 1949. A wide variety of eye, ear, nose and throat disturbances was represented. Routine examination of the nose and throat was done in all cases.

For the cytologic examination, the mucous discharge was collected more often from the pharynx or nasopharynx than from the nose. One specimen was taken from each patient and split so that two or three smears were made from the same specimen. One of the smears was stained and examined by the Hansel technique.⁶ The duplicates were stained and examined by other methods.

Records were kept on each patient regarding any family or personal history of allergic reaction, and as to whether there was any complaint of mucus in the throat.

I. Cause of Drip

The results of cytologic examination (Table 1) showed that 18 per cent of all patients had nasal eosinophilia. The nasal eosinophilia and neutrophilia were noted a little more often among those complaining of the drip. This indicated only a trend, however, because there were not enough cases to warrant definite conclusion that allergic reaction and infection are related to the complaint of mucus. Moreover, the complaint was subjective; and subjective data may be at variance with physical or laboratory data.

TABLE 1.—Relative to Cause of Postnasal Drip

	No. of Cases	Nasal Eosinophilia	Nasal Neutrophilia
All patients	100	18 (18%)	54 (54%)
Complaining of mucus	50	11 (22%)	34 (68%)
Not complaining of mucus	50	7 (14%)	20 (40%)

Bryant² in 1949 emphasized infection and allergic disease as causes of the postnasal drip. Many other causes, including enlarged turbinates, candy eating and subthyroid states, were discussed. In this regard, the records in the present study show that in 14 of the 50 cases in which there was complaint of mucus, the mucus contained neither eosinophils nor neutrophils (see Figure 1). Also the complaint of mucus was only a little more prevalent among patients who had nasal disease than among those with no nasal disease (Table 2). The results of cytologic examination thus suggest that something besides allergic reaction and infection must be looked for to explain the cause of the drip.

¹Presented at the 33rd Annual Meeting of the Pacific Coast Oto-Ophthalmological Society, Coronado, California, April, 1949.

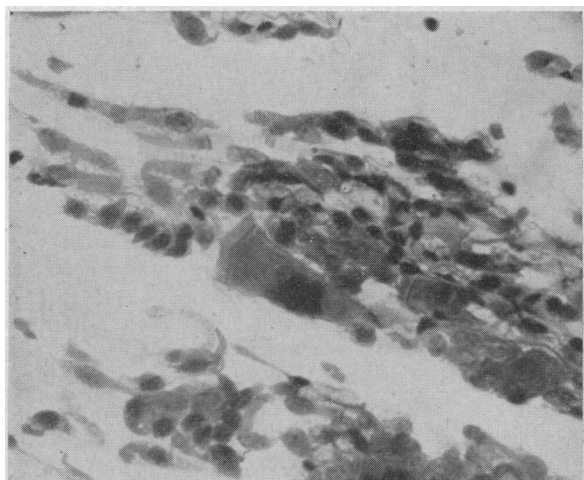


Figure 1.—Typical smear of postnasal discharge of "clear mucus," showing desquamated epithelial cells but no eosinophils or neutrophils.

TABLE 2.—Relative to the Diagnostic Importance of Eosinophils, Neutrophils and Rhinoscopy and History

Condition	No. Cases	Nasal Eosinophilia	Nasal Neutrophilia	Complaining of Mucus
No nasal disease.....	53	3 (5.6%)	16 (30%)	23 (43%)
Nasal disease	47	15 (32 %)	38 (80%)	27 (57%)
History of allergic reaction	38	12 (31 %)
No history of allergic reaction	60	4 (6.6%)
No nasal disease or history of allergic reaction	37	2 (5.4%)

One consideration is the effect that the various psychosomatic stresses to which the individual is so often subjected may have on the nasal mucosa.

Recently, Goodell and Wolff³ reported two patterns of disturbance of nasal function brought on by emotional stress. Vasoconstriction accompanied fear or grief; hyperemia with hypersecretion accompanied anger and frustration. They reported that, "In a subject with a large gastric fistula, vascular changes in the nose, under a variety of circumstances involving hyperemia or pallor, were found to parallel such changes in the mucous membrane of the stomach."

These nasal changes with increased secretion and production of mucus may in like manner follow disturbances of a physical nature, such as variations in environmental temperature and physical exertion and fatigue.

Under these varied circumstances in the absence of nasal disease, the presence of many pus cells in the postnasal mucus would not be a logical expectation. Yet, repeated or prolonged disturbances with vasoconstrictions and dilatations may often lead to local irritation, inflammation or infection, as was pointed out by Kerr and Lague.⁷ Moreover, such disturbances may make nasal allergic disease harder to relieve. On this account, the importance of applied nutrition in improving the quality of the tissues, with consequent increased resistance to environmental stresses, may readily be recognized.

II. What Patients for Cytological Examination?

Forty-seven of the 100 patients examined had obvious nasal disease with signs of acute or chronic reactions, and eosinophilia was noted in one-third of these 47 patients. Of the 53 patients with normal-appearing noses, three had nasal eosinophilia (Table 2).

Thirty-eight patients gave histories of allergic disease; eosinophils were noted in the nasal or postnasal discharge of about a third of them. Eosinophils were noted in the smears of only four of the group of 60 patients without history of allergic disease.

There were 37 patients with no evident nasal disease and no history of allergy. Two of these patients had nasal eosinophilia.

As to just what constitutes nasal eosinophilia, the author has been largely guided by Hansel's⁶ exposition:

"In view of the irregularity of distribution, it is often not possible to make an accurate evaluation in terms of percentages. We have adopted the plan of recording the cytologic findings in terms of plus-minus, 1+, 2+, 3+, and 4+ eosinophils and/or neutrophils."

The criterion of nasal eosinophilia used in this study, therefore, was the definite presence of more than an occasional eosinophil in one of a dozen or more fields, using magnification of 250. Except for four cases in which the finding was 1+, there was a finding of 2+ or more in all cases recorded as positive for eosinophilia.

In addition to eosinophils and neutrophils the mucus contained epithelial cells of different types, lymphocytes and monocytes. Should these cells be included in the cytologic examination? The answer seems to be no, for the most part.

However, the author is indebted to Benjamin¹ for his report on the presence or absence of monocytes (or mononuclear cells) in the smears in this series. The monocytes, as Sewell and Hunnicutt⁹ pointed out, make their appearance predominantly as the acute infection subsides or becomes chronic. Dr. Benjamin found them in 26 per cent of smears of mucus from patients with so-called normal noses and in 50 per cent of smears from patients with nasal disease. Although this disparity in incidence might indicate that the monocytes have diagnostic importance, the cells are difficult to recognize, according to Benjamin and also Small,¹⁰ another pathologist who looked at some of the slides. If, for instance, an epithelial cell loses some of its cytoplasm, it looks like a monocyte.

In one case in this group of 100 patients, a diagnosis of infectious mononucleosis eventually was made. It had been hoped that masses of monocytes could be demonstrated in the postnasal mucus and that a new diagnostic procedure for this disease would be established. However, the mucus contained no unusual number of monocytes.

Yet in the cytology of the drip, cells other than eosinophils and neutrophils must receive some con-

sideration, as something unusual may show up. Hansel⁵ reported a case in which all fields were covered with squamous epithelial cells. This led to discovery of a branchial cyst.

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